Background Study

Commission of Inquiry on the Pharmaceutical Industry

Canada

Transfer Pricing of Drugs and Pharmaceutical Intermediate Products

G. David Quirin

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Transfer Pricing - Drugs

Introduction

Do multinational drug companies manipulate prices on transactions between subsidiary and parent firms in such a way as to avoid payment of taxes in Canada? What are the opportunities for such manipulation? Are such opportunities taken into account when these companies decide where to locate production-related activities? Are such opportunities sufficiently decisive in decisions of this kind as to preclude the location of new drug manufacturing operations (or even the retention of existing ones) in Canada no matter how Canadian patent protection on drugs might be amended?

Any serious examination of the economics of the pharmaceutical industry and the role of multinational enterprises therein will raise questions of this kind; when the examination focusses on the activities of such companies in Canada, the questions emerge in the form we have given them above. While the importance of maintaining the short-term integrity of the fiscal system should not be minimized, it is secondary to the locational issues raised in the last two questions, if only because the potential contribution of any industry to a country's tax revenues is dependent on the extent to which the taxable activities of the industry are located in that country. Potential revenues will be greater if sales offices are located in a country than if its markets are served from sales offices in an adjacent country; greater still if a significant portion of manufacturing operations are carried out within the country.

Prices charged by a parent company to a subsidiary, by a subsidiary to a parent, or by one subsidiary to another, are referred to as "transfer prices". They may be levied purely for internal control and accounting

purposes, in which case they are of limited concern to outsiders. However, when such prices are levied on transfers taking place across political borders, they also play a role in determining the allocation of income between, and of tax liability to, the different political entities involved. This type of transfer pricing, sometimes referred to as "fiscal transfer pricing" [Mathewson and Quirin (1979)] is of obvious concern to tax and other authorities in the affected jurisdiction.

Purely internal types of transfer price are usually intended to ensure that managers of largely autonomous profit centres in decentralized organisations make decisions which are congruent with the goals of the organisation; their primary function is thus motivational [Dean (1955), Hirshleifer (1956) (1957), Gould (1964). Less-generally recognized is the fact that "purely fiscal" transfer prices may also affect resource-allocation decisions. To the extent that they reduce the tax consequences associated with certain patterns of resource use, they tend to reduce tax-induced distortions in resource allocation. [Mathewson and Quirin (1979)]

Concern over transfer pricing in the pharmaceutical industry arises in part out of the more fundamental concern that prices of drugs are in some sense too high and that transfer pricing is one of the devices used by multinational drug houses to facilitate such overcharging, while preserving the appearance of normal or even modest profits in the Canadian subsidiary. A subsidiary but related charge is that the transfer pricing process has been used by drug multinationals to "recognize profits in low-tax countries" [Gordon and Fowler (1981), p. 29] and minimize reported profits elsewhere.

The pharmaceutical industry is relatively unique in a number of respects which make definitive pronouncements on profitability and on the appropriateness of transfer prices difficult. The production processes of the industry are information-intensive, involving both the creation of information via research and development and its dissemination via advertising and the efforts of sales representatives calling on physicians. Accounting convention requires the bulk of the expenditures for these purposes to be expensed; the economic reality is that they create forms of goodwill which are to some extent durable. While average accounting profitability reported by drug multinationals on a conventional basis is high relative to other industries, the difference disappears if these expenditures are instead capitalized and amortized over a useful life consistent with the apparent economic lifespan of the information created. [Grabowski and Mueller (1978); Ayzanian (1975)(1983) but see also Comanor and Wilson (1967)(1974)].

Evidence on transfer pricing in this industry is fragmentary and ambiguous. Corporate and Consumer Affairs Canada [(1983) p. 16 n. 5] refers to a Revenue Canada study of transfer prices for 14 major drugs which purports to show that intra-firm prices were "more than three times higher than" (Four times as high as?) "prices paid for the same drugs in the open market." Without disputing these facts (which are not fully accessible) it should be recognized that equally large differences can be found between wholesale prices of branded and generic versions of the same drug. [Gordon and Fowler (1981), pp. 67-8]. Consequently, the observed differences may represent nothing more than a manifestation of the normal pricing policies of the branded drug

manufacturers, and may be quite unrelated to any manipulation of transfer prices as such.

A problem which plagues any attempt to assess transfer prices in this industry, including the present one, is that many of the intermediate products traded across borders do not have any market outside of the multinational firm within which they are traded. In such cases no "arm's length" basis for comparison is available and any judgement with respect to their appropriateness can only be made in relation to a standard which is in the final analysis arbitrary. The standard used here is that, where risks are equal, transfer prices should permit the recovery of cost plus a profit margin which divides ultimate after-tax profits between the originating units and the selling units in a ratio proportionate to the investment in fixed assets and necessary working capital. This standard has been discussed in greater detail elsewhere [Quirin (1985)]. It will, in general, result in comparable risk-adjusted rates of return on capital employed in all subsidiaries and the parent. It should be noted that, because of the information content of the branded product, identical chemical substances purchased by generic drug manufacturers may still not be identical to the branded products purchased by Canadian affiliates of multinational firms.

There is no evidence that wholesale drug prices are generally higher in Canada than in the U.S., though they may be higher than those in some other countries. Gordon and Fowler constructed an index of drug prices for Canada and the U.S. which showed the following:

All Drugs	(U.S. = 100) 1968	1976
Canada, quantity - weighted	94.0	93.6
unweighted	110.1	106.6

[Source: Gordon and Fowler (1981)]

On an appropriately-weighted average basis, Canadian drug prices are lower than their U.S. counterparts, though important differences exist in individual drug categories and, by 1976, between groups for which compulsory patent licenses had been granted and those for which they had not. Even with an arbitrary adjustment for transfer pricing that appears more than ample, and the adding back of selling costs they deem "excessive", the profit margins on Canadian sales found and reported by Gordon and Fowler are lower than equivalent U.S. profit margins.

We have argued elsewhere that comparisons of profit margins are not an appropriate test for the existence of transfer price manipulation, and that differences in profit margins may be quite justified in terms of capital intensity and other variables [Quirin (1985)]. Return on invested capital, with appropriate allowances for risk, provides a much more suitable criterion for evaluating the appropriateness of intercorporate pricing policy. Low profit margins in Canada may reflect nothing more than the fact that the more accounting-capital-intensive stages of the manufacturing operations are located elwewhere.

In the following sections we examine the nature of the opportunity to manipulate transfer prices and the condition under which it becomes profitable. These conditions are then compared with existing tax regimes

in Canada's drug trading partners to estimate the extent of trade in pharmaceuticals which might be subject to transfer pricing. Actual earnings of multinational drug firms and their Canadian affiliates are then compared with a view to determining whether the extent and magnitude of transfer price manipulation can be detected from accounting data.

2. Defining Opportunities for Transfer Price Manipulation

Since transfer prices are sales between a parent company and its branches or subsidiaries located in different countries, it follows from the definition that the practise of manipulating transfer prices is confined to multinational firms, and that operations must exist in at least two jurisdictions for any opportunity to exist. As we shall see below, a second necessary condition is that there be differences in tax rates between at least two of the jurisdictions in which the multinational firm does business, and between which it trades intermediate or finished product.

A number of other factors help to determine whether or not transfer price manipulation pays. These include a number of legal factors, in addition to tax rates, such as

(a) the tax base,

(b) revenue recognition rules,

(c) state, provincial and local taxes,

(d) rates of customs duties,

(e) witholding taxes,

(f) foreign tax credit arrangements,

(g) tax treaty provisions,

(h) legal limitations on transfer pricing,

(i) special incentives, such as tax holdings for new plants,

(j) currency controls or similar restrictions on profit repatriation,

(k) the currency used and its rate of change in value against the home country currency of the parent,

(l) services provided by the parent and the nature of alternative arrangements to pay for them.

In addition, technological factors, such as the need to locate certain stages of the production process together, may restrict or otherwise limit the extent to which various parts of the production/marketing process can be relocated across borders in order to take advantage of transfer pricing opportunities. The condition that the firm operate in at least two jurisdictions defines the necessary minimum of separability. Transfer pricing opportunities will exist even if the functions performed by the local affiliate are confined to holding stock, breaking bulk, and related marketing operations.

It is, however, the legal framework of the tax systems of the separate countries, and specifically the differences between them, which creates the transfer-price-manipulation opportunity in the first place.

(a) <u>The Tax Base</u>

The tax that usually creates transfer pricing opportunities is the corporate income tax; customs duties may also play a role although it is usually secondary. Value-added-tax (VAT) does not, in the form in which it is levied by most of the countries using it, create any such opportunity, nor do

sales taxes levied on final sales. Individual countries' corporate income taxes may differ in several respects. Minor, but significant, differences may exist in respect of the deductibility of certain types of expense. Where such expenses must be incurred, it pays (ceteris paribus) to incur them in a jurisdiction in which they are deductible, and to accrue enough income in that jurisdiction to offset them.

Another significant difference is the geographical extent of the income regarded as taxable. Most countries tax a company on its worldwide income, including the income of its subsidiaries. This means a parent is taxed on worldwide income while a subsidiary located in a single country is taxed only in that country. An intermediate-level subsidiary will be taxed in its own country on its earnings and on those of its (lower level) subsidiaries. In practise this tax is limited to the incomes of a company and its downstream affiliates.

A minority of countries restrict their claims to income earned in that country alone, and do not seek to tax its foreign subsidiaries.

No countries have (as yet) adopted the "unitary" tax system used by California and about 14 other states in the U.S. in which the tax base is worldwide income, including upstream as well as downstream affiliates, with a formula-determined share attributed to (or claimed by) the taxing jurisdiction. Unitary tax systems are largely immune to transfer price manipulation, but appear to discourage investment to a degree disproportionate to any resulting benefits.

(b) Revenue Recognition Rules

Most countries taxing on a worldwide basis tax branch income (which is legally the income of the parent) as it is earned. Most, however, do not tax subsidiaries' income until it is remitted as dividends or otherwise to the parent. This permits the accumulation of earnings within the subsidiary at the subsidiary's effective tax rate; where this is lower than the parent company's marginal rate, a postponement benefit accrues. The long run tax liability accrues at the parent's rate, however.

A number of countries, including France and West Germany, provide an exception to this rule in cases where subsidiaries are located in tax-haven jurisdictions; the exception usually deems the earnings of such subsidiaries to be distributed as earned. Such amendments were adopted because companies with subsidiaries in such jurisdictions had found a number of effective devices enabling them to use the funds within the corporate network without declaring dividends, postponing repatriation and consequent liability for tax indefinitely. Devices sometimes used in this regard include intersubsidiary loans, and swap arrangements in which the loans are made by a bank to one subsidiary against the deposits of another held as collateral. While the "sham" provisions of the Canadian Income Tax Act permit the Minister to deem repatriation under certain circumstances, Canada must be listed among those countries which do not, as a general rule, except earnings of tax haven subsidiaries from the general realize-when-repatriated rule.

(c) State, Provincial and Local Taxes

The critical marginal income tax rate which determines whether or not there is any advantage to be gained by transfer price manipulation is, of course, the sum of the effective marginal rates of federal, provincial or state, and municipal taxes to the extent these are applicable in the circumstances.

Where, as in the Canadian case, a credit or abatement is allowed for provincial taxes, the effective rate is computed after deducting the credit and after the addition of any other applicable surtaxes or credits. In Canada, these include the manufacturing and processing deduction, which reduces the basic federal rate before surtax to 40%, and the surtax of 5% on federal tax payable, which applies to the net federal tax after deduction of the provincial tax abatement and which raises the effective federal rate to 31.5% on manufacturing and processing operations. This is reduced further for firms qualifying for "small business" credits; this is ignored here as a minimal efficient scale pharmaceutical manufacturer is unlikely to qualify for small business treatment.

Many jurisdictions apply progressive rates to corporate income, as does Canada via the Small Business exemption. In general, however, it is the (combined) rates applicable to the largest size class that are relevant for our analysis, since all significant pharmaceutical manufacturers fall into this class.

Effective rates of combined federal and combined tax applicable in each of the 10 provinces are shown in Table 3 below.

In the U.S., corporate income taxes are levied by the federal government, by about three-fourths of the states, and by several dozen cities, mostly small. There is no credit but applicable state taxes may be deducted from income in determining federal tax liability (but not vice versa). Thus the effective combined rate when the 46% federal rate is imposed in a state with a 7% to 10% state tax may be computed as follows:

	7%	10%
Income before tax	100.00	100.00
State tax	7.00	10.00
Income before federal tax	93.00	90.00
Federal tax @ 46%	42.78	41.40
Income After Tax	50.22	48.60
Effective Combined Rate	49.78	49.60

(d) Rates of Customs Duties, etc.

Rates of customs duties and ad valorem excise duties are also relevant in determining whether or not transfer price manipulation pays, to the extent that the transfer price serves as the dutiable value of the goods transferred. An increase in the transfer price on goods being moved into Canada will reduce Canadian income tax liability but increase import duties payable to Canada; in general income taxes and customs duties create incentives to manipulate transfer prices in opposite directions, [Mathewson and Quirin (1979)] but the net effect will depend on which rate is greater, having due regard for the deductibility of the duty. An increase in the transfer price on an inward transfer, with no change in final selling price, will increase duty payable. While this will result in a decrease in profit and in a reduction in income tax liability, the fraction

of the duty increase thus offset is, of course, dependent on the income tax rates paid by the subsidiary initially and the parent ultimately.

(e) Withholding Taxes

Most countries impose a withholding tax on payments of interest, dividends and in some cases management fees and similar payments by companies in their jurisdiction to foreigners, including foreign parent companies. These are in addition to any corporate income tax payable and are, in effect, a substitute for the personal income tax payable by resident investors on domestic companies. The amount and application of such withholding tax is a matter usually established by treaty; most of Canada's tax treaties provide for mutual reductions in withholding tax rates. As applied to corporate profits, no withholding tax liability exists until dividends are declared and earnings remitted to the foreign parent.

(f) Foreign Tax Credit Provisions

The majority of countries, in taxing multinational enterprises, allow credits in respect of foreign taxes paid by their subsidiaries against Corporate income and witholding tax liabilities created by the repatriation of foreign earnings. Such credits may be applied on a country-by-country basis, against the tax otherwise payable on income originating in each country, in effect the effective ultimate tax rate after repatriation becomes the higher of the home country rate or the host country rate. In other jurisdictions, notably

the U.S., they are applied on a global basis, with taxes paid in all countries credited against total U.S. tax payable on domestic operations. This arrangement permits the effective ultimate tax on income originating in a given host country to be reduced to the lesser of the parent company's home country rate or the host country rate, as long as there is enough income in low-tax jurisdictions or tax havens to absorb the excess foreign tax originating in the host country. It should be noted in this regard that U.S. tax reform proposals [Secretary of the Treasury (1984)] currently under consideration contemplate, inter alia, a change in the basis for computing the foreign tax credit from the present global basis, to a country-by-country basis. As noted above, this will raise the effective ultimate tax rate to the higher of the U.S. or foreign rate, rather than, as at present, the lower.

As noted earlier, tax credits for foreign taxes become important only when the foreign-source income becomes taxable in the parent's hands, i.e., usually when dividends are remitted. A number of economists have noted that the effective impact of any tax payable on remission is lessened, in present value terms, if remission is postponed long enough [Frisch and Hartman (1983), King and Fullerton (1983), Brean (1985)]. While this is undoubtedly so on a cash-flow basis, it should be noted that the tax which must be shown on consolidated financial statements is the ultimate tax, while the portion

deferred is set up on the balance sheet as "deferred income taxes." To the extent that financial statement profit is a motivating factor, deferral may be of less importance than supposed by current economic orthodoxy.

(g) Tax Treaty Provisions

As noted earlier, tax treaty provisions may work to reduce witholding tax rates or to exempt certain categories of income.

(h) Legal Restrictions on Transfer Pricing

There are limits to the degrees of freedom available to multinationals seeking to manipulate transfer prices. The most important limits are those provided by individual countries' tax legislation. Most require that transfers take place at the arm's length price or equivalent, as does the Canadian legislation. (Income Tax Act, s69). Most countries apply criteria established in a 1979 OECD report [OECD (1979)]. Canada adheres with several reservations to the criteria in this document [Robertson (1982)], and in particular rejects the principle of non-discrimination by country of origin, which it believes to favour capital-exporting states unfairly [Brean (1984)].

(i) Special Incentives

Many countries, like Canada, offer incentives for new industry locating in depressed or underdeveloped regions. In a number of countries, the incentive takes the form of a tax holiday for an initial period of operations, which may in some instances be as much as twenty years, though periods

of ten years or less are more common, (Cf. Canada's former three-year exemption for new mines and the present 40% rate allowed for manufacturing and processing operations.)

(j) Currency Controls, etc.

Transfer price manipulation is a classic device for moving funds past exchange control systems which may provide funds for imported materials but not for remission of profits or repatriation of capital, just as overbilling by a friendly but arm's length supplier is often used for the same purpose. As exchange controls are of diminishing importance in the world, this application of the transfer pricing mechanism has fallen into relative disuse.

(k) Currency Differences

Multinational parents and their subsidiaries usually operate in different currency areas. Management of the net position in different currencies is an important part of working capital management in such enterprises.

Transactions between parent and subsidiary may be denominated in a choice of currencies, either the parent's or the subsidiary's, and provide an opportunity to take a long or short position in one of the currencies, either on an open basis or as a hedge against other exposures. The latter is the more likely use.

(l) Services Provided

Parents may, and usually do, provide management, technological consulting, R & D and similar services to a subsidiary. It is usually appropriate that these services be paid

> for. There are a number of situations in which it is appropriate to expect recovery of expenditures plus a markup on them, if only because of the delay in reimbursement. Where the tax system of the country in which the subsidiary is located does not permit recovery of such a markup via a management fee or R & D payment, the markup on sales of intermediate produce may have to be adjusted to reflect the fact. Similar considerations apply a fortiori in cases where no management fees or R & D charges are permitted.

The case discussed in the last paragraph reflects one of the significant areas where Canada departs from OECD guidelines and which involves the pricing of pharmaceuticals. The OECD report explicitly rejects the use of "pirate prices", or "prices that may be charged by a producer who has effectively copied branded products, perhaps by locating in a jurisdiction with little or no patent protection" [Robertson (1982), p.778] . The OECD rationale for this rejection is that while such prices "may give an indication of the mere cost of production of the potential goods, they could hardly be relevant for any other purpose as they do not take into account research and development, technical assistances and other related services" [OECD, (1979), pp.36-7].

Revenue Canada takes the position that "'mere cost of production' is extremely relevant" [Robertson (1982), p.778] and suggests that R&D, technical assistance, etc. be charged separately.

This may not totally resolve the problem, as such charges are also subject to scrutiny and no markup on costs is allowed. Revenue Canada does "not question royalites of 6 percent or less or patented pharmaceutical

products" [idem]; presumably it does question royalties in excess of 6 percent.

The effects of such legal guidelines is to put a limit on the transfer price, in the Canadian case this is usually an upper bound; in many U.S. situations the law provides a lower bound. In practise, firms will maximize profits by moving the price as far in the profit-increasing direction as the law allows; as this is not known with certainty there may be hesitancy on the part of some tax payers to push to the limit, others may choose to push the limit as far as it will go until stopped by reassessment procedures.

3. Critical Tax Rates

In the absence of a tariff on imports, the existence of an incentive to manipulate transfer prices depends on the comparative marginal rates of corporate income tax, including not only federal but any applicable provincial, state or municipal income taxes. If the aggregate Canadian tax rate is higher than that in the exporting country, it will pay in the short run to shift as much income as possible to the exporting country in order to minimize the tax burden. This proposition must be amended slightly in the event there is an import duty. In the dutiable case, an increase in the transfer price will reduce the Canadian income tax payable, but the decrease will be offset in part by an increase in customs duty.

Algebraically if we let

t_f = the foreign tax rate

t_c = the Canadian tax rate

d_c = the Canadian rate of duty

and assume an increase of ΔP in the transfer price, we get an increase in the foreign tax of $t_f \Delta P$, an increase in the duty payable of $d_c \Delta P$ and a reduction in the Canadian tax of $t_c(1+d_c)\Delta P$. Combining these terms, the total impact would be a short-run reduction in tax if

$$t_f \Delta P + d_c \Delta P - t_c(1+d_c)\Delta P < 0 \qquad (1)$$

or if

$$t_f < t_c + t_c d_c - d_c \qquad (2)$$

Consideration of inequality (2) leads to the notion of a critical rate, namely the rate of foreign tax above which it pays to reduce transfer prices on shipments into Canada, but below which it pays to increase them. The critical rate T_f is simply given by

$$T_f = t_c - (1-t_c)\, d_c \qquad (3)$$

Where the exporting country, or the country in which the exporting subsidiary's parent is resident, taxes income on a world-wide basis, any tax relief obtained by manipulating transfer prices in this fashion will be short-run, at best.

Most countries using a world income tax base tax the income of subsidiaries as received in the form of dividends. Dividend income is taxed at the parent company's rate, while taxes (but not duty) paid by the subsidiary are deducted from the parent's final tax bill as a tax credit. In this case, if there is any duty payable, the long-run income of the parent is reduced by the amount of the duty on any increase in transfer prices. The mechanics of the respective income taxes, witholding taxes and tax credits are shown in Tables 1 and 2 for a zero duty and 10% duty case, respectively, assuming a Canadian tax rate of 40%, a foreign tax rate of 35% and a Canadian witholding tax rate of 15%.

These considerations imply that even where differences in income tax rates are such as to create a short-run saving from increasing transfer prices, the impact of import duty creates a long-run incentive in the opposite direction. Present value considerations may favour the short-run solution if the period of deferral is long enough. We note, however, that where branches are involved instead of subsidiaries, income is generally taxable when earned and no deferral is available; the "long-run" impact is immediate. In some countries, notably France and West Germany, tax authorities may apply branch treatment to subsidiaries in tax haven jurisdictions, thus eliminating deferral possibilities. Even when a subsidiary is involved and deferral is possible, current accounting standards require that the amounts of tax ultimately payable on repatriation be set up in a deferred income tax account when earned. [CICA Handbook, sec. 1600.55 (1975), (Canada); Accounting Principles Board Opinion 23 (1972), (U.S.)]. To the extent that managers are motivated by reportable income, rather than cash flows, the incentive to defer tax by manipulating transfer prices may well be reduced, particularly in cases where the existence of a duty means a reduction in reported income due to the added duty cost. Unfortunately, tests of the hypothesis that managers maximize reportable income instead of discounted cash flows, or vice versa, appear to us to be inconclusive.

4. Critical Tax Rates and The Incentive to Manipulate

Table 3 shows the effective combined tax rates for Canada, which vary between provinces as the result of differences in Provincial corporate tax rates, most of which exceed the federal tax abatement. Figure 1 shows critical tax rates, as a function of rates of duty, for Ontario,

Quebec and B.C., which have combined corporate tax rates of 44.5%, 39.5% and 46.5% respectively. Areas above the respective lines are tax/duty combinations for which the applicable short-run incentive is to reduce transfer prices, in areas below the lines, the incentive is to increase transfer prices.

Table 4 summarizes features of the corporate income tax laws of a number of countries, including the countries from which most of Canada's drugs originate. Data on the applicable tax rates and incentives to manipulate transfer prices for other countries will be found in Appendix A.

Table 5 lists the principal countries from which Canada imported pharmaceutical products or materials in 1980 or 1983, indicating imports and share of the Canadian import market for each year. A complete listing by countries, showing imports, duty paid and rates of duty, may be found in Appendix B. These data, for the countries cited in Table 5, also appear superimposed on the critical tax rate graph in Figure 2. On the basis of this computation, we have classified countries into three groups:

a) Those from which it pays to reduce transfer prices to Canada;

b) Those from which it pays to increase transfer prices to Canada;

c) Uncertain.

Those in category (b) are, in most cases, countries with lower marginal tax rates than Canada; a few make this category because of partial or total tax exemptions for new manufacturing enterprises. The U.K. is categorized as uncertain; incentives of this type have been available in "development areas" in Scotland, Wales, Northern Ireland and parts of the Midlands for some time and further incentives were provided in the "free enterprise zones" within these areas established in 1980 [Grubel, (1983)].

A significant but unknown proportion of U.K. exports come from such established areas. Omitting the U.K., imports from countries from which it pays to increase transfer prices to realize profits elsewhere accounted for nearly 21% of imports in 1980 and about 27% in 1983. The principal countries in this category (excluding the U.K. for the reasons indicated) are the following:

	Import Share	
	1980	1983
Bahamas	0.5	0.5
Hong Kong	0.3	0.5
Ireland	0.9	1.5
Italy	2.5	2.0
Puerto Rico	7.6	8.0
Spain	0.2	0.7
Switzerland	6.6	12.7

Switzerland and Puerto Rico between them accounted for 14.2% of Canada's imports in 1980, and for 20.7% in 1981. Switzerland has been a leader in the pharmaceutical industry for decades, and the favourable tax climate found there is only one of the reasons for its prominence. Others include its history of neutrality, its reputation as a safe haven for capital and the availability of a technically-proficient labour force at all required levels of capability.

Puerto Rico's rise to prominence is almost solely due to tax holidays for new industry granted as development incentives during the island's "Operation Bootstrap" in the late 1950's. These encouraged U.S. firms (in particular) to set up offshore subsidiaries to supply their North American markets from a tax-free location. Other "success stories" in terms of attracting pharmaceutical industry investment are Ireland and Spain. Both are more recent entrants in the "favourable

tax regime" sweepstakes; Ireland began to be important on the world scene around 1970, Spain even later. Italy appears on the list because its tax rates are lower than Canada's; they are, however, at least on paper, substantially higher than those in the other countries listed, although abundant anecdotal evidence suggests they may be reduced somewhat in practise.

The evidence on trade flows thus suggests that a substantial and growing minority of Canada's pharmaceutical imports come from countries with lower marginal rates of corporate income tax, often significantly so. Our analysis suggests that it would pay profit-maximizing multinationals locating part or all of their manufacturing operations in such countries to raise transfer prices on shipments to Canada, and perhaps to other high tax jurisdictions as well.

Our analysis to this point has implicitly treated location, non-tax manufacturing costs, and ultimate product prices as given, and the only variable considered has been the transfer price at which the product is transferred between jurisdiction. The analysis is thus short-run in character. In the long run, corporate income tax ceases to be a tax which takes a share of already-maximized profits, but becomes an element of capital costs, a tax on the use of capital in a corporate context in a particular location. As such, a wider range of avoidance alternatives become available. Firms will determine appropriate and acceptable transfer prices and resultant tax burdens in computing the costs of performing a particular function in a particular location, and will, in general, locate that function in such a way as to maximize after-tax profits. The impact of taxes and transfer pricing on long-run production decisions is analyzed in Mathewson and Quirin (1979).

As noted there, the need for consistency and credibility to tax auditors in several countries imposes severe constraints on the freedom to manipulate transfer prices as such. There are, however, alternative devices for moving profits around, in the form of management fees, royalties and charges for R & D services. For fiscal purposes, interest charges, management fees, royalties and R & D levies imposed on subsidiaries by parents may be regarded as transfer prices, even though in an accounting sense they represent not prices but allocations of costs. As allocations, they need not be determined by the same criteria used to establish transfer prices for goods, though they must meet their own tests of consistency. The existence of several categories of cost recovery via allocation within a multinational, each of which is allocated on its own criteria, restores some of the degrees of freedom that are lost because of the need to determine transfer prices for goods under a single consistent system. It would, however, be a mistake to assume that complete freedom to generate a desired geographic distribution of profits results; so that for example, if a company operated in three countries and controlled the transfer price of one commodity, plus a management fee and an R & D charge, it could move profits around at will. Limits still remain because allocations must be non-negative and must be based on some activity measure or other attribute that is plausibly related to the account being allocated.

For most multinationals, except those few in which the parent company itself is resident in a low-tax or tax-haven jurisdiction, or one which taxes domestic income only, any tax savings which result from the manipulation of transfer prices on cost allocations are short run

only; full tax at the parent company's effective rate becomes payable when the funds are repatriated.

The decision to repatriate will be influenced by cash flow management considerations. There are, however, a number of devices by which repatriation may be postponed almost indefinitely. One such device is the use of an intermediary subsidiary located in a tax haven juristiction to own shares in the operating subsidiaries. Dividends paid to such a subsidiary may be "short-stopped" and invested in other subsidiaries without the need to repatriate to the parent. Use of a holding company in a tax haven jurisdiction for this purpose is constrained in a number of countries, including Canada, France, West Germany and the U.S. by legislation that permits investment income of the tax-haven subsidiary to be treated as constructively distributed to the parent under certain conditions [Arnold (1983)]. Simpler, but potentially awkward is a system in which funds needed in one subsidiary are lent directly by another subsidiary which has surplus funds. Under certain circumstances, transaction of these types will be treated by the tax authorities, at least in some countries, as involving constructive repatriation, and will attract tax as a consequence. Still another device, widely and increasingly used, in which no funds change hands between affiliates, involves the use of a swap loan arrangement in which bank deposits or securities held by one affiliate are pledged with a bank as collateral for another affiliate's loans. There is a cost associated with the use of this device, but it may be small in relation to the potential tax liability postponed.

The above by no means exhaust the possibilities for tax avoidance/evasion available to multinationals. One device involves the manipulation of Capital Cost Allowance on Canadian tax returns so that maximum Canadian tax is paid (and maximum tax credits earned) in years in which profits are remitted to the U.S. This practise is referred to by Brean [Brean (1984) p. 110] as the "rhythm method." Another practise, referred to as "double dipping" or the "Dutch treat", involves the borrowing of funds in Canada by a multinational which invests them in or relends them to a tax haven subsidiary, (often in the Netherlands Antilles, hence the name). The tax-haven subsidiary in turn lends the funds to another subsidiary in a third country. Both the original borrower and the third-country subsidiary claim interest as an expense for tax purposes, in effect getting a double deduction for the same funds. [Brean (1984) p. 120]. While "double dipping" involves the use of a manipulated (low) transfer price on the funds lent to the tax-haven subsidiary, neither of these devices involves the manipulation of transfer prices for a product, nor of charges for management fees or R&D services. Hence, their relevance to the present discussion is perhaps limited, except to indicate that manipulation of transfer prices for products, management fees, and R&D services is not the only, and may not be the most attractive, device available to a multinational in search of tax avoidance measures.

5. Extent and Importance of Transfer Price Manipulation

The above analysis shows that when initial manufacturing activities are located in certain locations and final activities in others, disparities in tax rates create an incentive to manipulate transfer prices and cost allocations to reduce the tax burden. Where source country tax rates are above a critical level determined by destination-country rates, the incentive is to lower transfer prices or cost allocation so as to shift profits forward to the country with the lower tax rate. Where source country rates are below the critical level, the incentive is to raise transfer prices and allocations so as to shift profits in the opposite direction.

These lead to the hypothesis that if profitability of Canadian subsidiaries is compared with world-wide profitability, the ratio of Canadian profitability to world profitability will be significantly lower for those firms having parents in low tax/tax haven jurisdictions than for those with parents in normal or high-tax jurisdictions.

At least implicitly this assumes that the product lines of parent and subsidiary are similar - though one may undertake stages in the production process that the other does not. In practise, many drug firms have become subsidiaries of conglomerates, so that while the product line of the Canadian subsidiary is the same as that of its proximate parent, it is much more specialized than that of the ultimate parent. We have a sample of some 24 Canadian subsidiaries for which subsidiary and parent company data is available, the former from annual reports or filings under the Corporations and Labour Unions Return Act, the latter from public sources such as 10-K reports filed with the S.E.C., data published in the annual statistical issue of SCRIP, etc. The product line match

between parent and subsidiaries is less than perfect but is, in our opinion, close enough to justify comparisons.

Comparisons are further vitiated by the limited extent of the data available. Because of significant differences in asset turnover ratios, profit margins on sales are irrelevant, as noted above. What we have, however, is net income as a percentage of assets for the Canadian companies, net income as a percentage of capital employed for the parents. The appropriate measure of profitability, net profit as a percentage of shareholders equity, is not available for the Canadian companies on the data base used, and would only weaken comparability further if computed for the parents.

The statistical hypotheses we test for behavioural differences is that the ratio of Canadian profit expressed as a percentage of assets, (measured at historical cost less depreciation) to parent profit expressed as a percentage of capital employed (similarly measured) will be higher for those pairs in which the parent is located in a jurisdiction in which tax rates encourage lowering of transfer prices to the Canadian subsidiary than for those in which tax rates encourage raising tax rates. Table 6 reports means and estimated Standard deviations for the two parts of the sample. The mean ratio is strongly positive in the former case, negative in the latter, as predicted.

Despite the small sample size for the second group, the t-ratio of 2.189 is in excess of the critical value at the 5% significance level for 22 degrees of freedom; the null hypothesis that the ratios are identical must accordingly be rejected.

Thus, the evidence available suggests that multinational drug companies are able to shift profits by using transfer prices in some degree, in

the direction suggested by the model. Owing to sample sizes and data comparability problems, the empirical data are perhaps not as conclusive as one might wish.

6. Conclusion and Some Implications

The analysis above indicates that multinational drug firms headquartered in low tax-rate or tax haven countries have an incentive to set transfer prices in such a way as to move profits from high tax rate jurisdictions, such as Canada to the low tax rate jurisdiction, while companies based in high tax-rate jurisdictions (relative to Canada) have the opposite incentive. The empirical evidence suggests that some shifting along these lines takes place.

For a company contemplating the construction of a new plant in such a location and seeking to determine the required level of earnings needed to justify the investment (long run total costs) this means that it is not only appropriate to lower the gross-up for tax on the required rate of return in proportion to the lower tax rate, but that a further reduction in the gross-up should be made to reflect the tax avoidance possibilities in other jurisdictions to which the plant's output will be shipped. In essence, because of transfer pricing opportunities, the effective marginal tax rate in a zero-rate jurisdiction may well be negative.

The trade statistics indicate that an increasing proportion of Canada's drug imports come from such jurisdictions. Unless equivalent or offsetting advantages are created for Canadian-based manufacturers, it is doubtful that shifts of manufacturing from locations in low-tax countries to Canada is likely to come about; a continuing shift in production to such jurisdictions seems more likely.

A majority of drug imports continue to come from jurisdictions which have higher tax rates than Canada, and from which it pays to reduce transfer prices in order to shift profits into Canada. While the additional incentives needed to encourage relocation of drug manufacturers and related activity from such countries to Canada appear to be much smaller than those required vis-a-vis low tax countries, it should be remembered that when relocation is under consideration, the low-tax countries will frequently figure among the alternatives being considered. Thus it is by no means clear that a small increase in incentives, however provided, will be sufficient to bring about any great increase in the volume of drug manufacturing in Canada, although it might serve to retain operations which are already here but are in danger of being lost.

From a revenue standpoint, since approximately three-quarters of present drug imports come from countries from which it pays to reduce transfer prices in order to shift profits into Canada, and only one quarter from jurisdictions from which it pays to raise transfer prices in order to shift profits out, it is far from clear that Canada loses tax revenues, on balance, as a result of the practise. While transfer pricing undoubtedly reduces tax revenues in individual cases, it seems likely to increase them in a larger number of cases involving a larger volume of imports.

A final consideration is that while the U.S., which accounts for nearly half our drug imports, is currently in a high tax rate category, from which it pays to underprice transfers to Canada, tax reform proposals recently advanced by the administration contemplate a reduction in the marginal corporate tax rate to 33%. At that rate, the incentive which now exists will be reversed and it will pay to increase transfer prices on drugs destined for the Canadian market.

APPENDIX A

Table A-1 lists countries from which Canada imported significant volumes of pharmaceutical products or materials in 1980 - 1983. The table indicated the tax base, relevant tax rates and the existence (or non-existence) of incentive tax holidays as reported in Price, Waterhouse Corporate Taxes: A Worldwide Survey (New York, 1980). In the last three columns, the direction of incentives to manipulate transfer price is shown. This is based on the tax rate; where incentives, tax holidays are available, it is assumed that the enterprise qualifies for such treatment. Such treatment accounts for the majority of situations where there is an incentive to raise transfer prices. Centrally directed economies in Eastern Europe and Asia are classified as having an incentive to lower transfer prices despite the lack of any meaningful tax rate, because of persistent shortages of hard currencies. A similar assessment has also been made in the case of Israel.

APPENDIX A

TABLE A-1

	Base	Effective Corporate Tax Rate	Incentive Tax Holidays	Incentive to: Lower Transfer Prices	Raise Transfer Prices	Uncertain
Austria	W	27.5-55	No	x		
Australia	W	46	No	x		
Argentina	L	53	Yes		x	
Bahamas	W	0	n.m.		x	
Barbados	W	48	Yes		x	
Belgium/Luxembourg	W	45	No	x		
Bermuda	0	0	No		x	
Bulgaria		n.m.f.		x		
Brazil	L	35-60	No	x		
Chile	W	37			x	
China (P.R.)		n.m.f.		x		x
Colombia	W	40	No		x	
Czeckoslovakia		n.m.f.		x		
Denmark	W	40	No		x	
Egypt	W	32	Yes		x	
Finland	W	43	No	x		
France	L	50	No	x		
Germany (F.R.)	W	36-56	No	x		
Haiti						x
Hong Kong	L	16.5	No		x	
Hungary		n.m.f.		x		
Indonesia	W	55-60	Yes		x	
Indiana	W	35	No		x	
Ireland	W	50-70	Yes		x	
Israel				x		
Italy	W	38.8	No		x	
Jamaica	W	45	Yes		x	
Japan	W	> 50	No	x		
Korea (S.)	W	33	Yes		x	
Mexico	W	> 50	No	x		
Netherlands	W	48	No	x		
New Zealand	W	45	No	x		
Norway	W	51	No	x		
Panama	L	50	Yes		x	
Poland		n.m.f.		x		
Portugal	W	40-52	Yes		x	
Puerto Rica	W	45	Yes		x	
Romania		n.m.f.		x		
Singapore	W	40	Yes		x	
South Africa	L	46.2	No	x		
Spain	W	33	No		x	
Sweden	L	60.4	No	x		
Switzerland	L	Low	No		x	
Taiwan	W	35	Yes		x	
Trinidad-Tobago	W	45	Yes		x	
Turkey	W	40	Yes		x	
United Kingdon	W	52	Yes			x
Uruguay	L	30	No		x	
U.S.A.	W	46-53	No	x		
U.S.S.R.	W	n.m.f.		x		
Virgin Islands (U.S.)	L		Yes	x		
Yugoslavia		n.m.f.		x		

APPENDIX B

Imports and Duty Paid, by Country of Origin

Country	Exports to Canada ($000)		Duty Paid ($000)	Average Rate of Duty (1983)
	1980	1983	1983	
Austria	628	949	67	7.1
Australia	1,910	3,055	34	1.1
Argentina	30	37	-	-
Bahamas	1,661	2,576	1	-
Barbados	3	-	-	-
Belgium/Luxembourg	4,966	3,308	148	4.5
Bermuda	31	-	-	-
Bulgaria	178	191	2	1.0
Brazil	173	1,807	160	8.9
Chile	61	271	-	-
China (P.R.)	1,635	4,020	128	3.2
Colombia	9	-	-	-
Czechoslovakia	21	-	-	-
Denmark	5,904	3,203	210	6.6
Egypt	33	-	-	-
Finland	40	65	5	7.7
France	9,792	6,737	499	7.4
Germany (F.R.)	16,981	24,860	2,188	8.8
Haiti		782	78	10.0
Hong Kong	1,215	2,227	197	8.9
Hungary	256	-	-	-
India	130	122	7	5.7
Indonesia	-	18	-	-
Ireland	3,131	7,293	623	8.5
Israel	233	397	4	1.0
Italy	8,858	9,537	335	3.5
Jamaica	3	14	-	-
Japan	8,511	6,958	255	3.7
Korea (S)	552	612	11	1.8
Mexico	2,347	2,247	142	6.3
Netherlands	2,672	2,053	167	8.1
New Zealand	34	-	-	-
Norway	283	86	2	2.3
Panama	308	317	4	1.3
Poland	148	181	17	9.4

APPENDIX B (cont'd.)

Country	Exports to Canada ($000)		Duty Paid ($000)	Average Rate of Duty (1983)
	1980	1983	1983	
Portugal	30	102	-	-
Puerto Rico	27,503	38,230	2,760	7.2
Romania	15	88	-	-
Singapore	203	153	11	7.2
South Africa	1,322	483	11	2.3
Spain	842	3,223	264	8.2
Sweden	6,334	8,435	626	7.4
Switzerland	23,916	61,248	2,348	3.8
Taiwan	39	22	3	13.6
Trinidad-Tobago		52	-	-
Turkey	35	-	-	-
United Kingdom	48,546	56,896	5,224	9.2
Uruguay	38	45	5	11.1
U.S.A.	172,500	223,832	14,406	6.4
U.S.S.R.	4	36	-	-
Virgin Islands (U.S.)		607	61	10
Yugoslavia	1,086	570	33	5.8

Compiled from Statistics Canada, Imports (catalog 65-207, Annual).

Omits countries supplying less than $2,000 worth in either year.

FIGURE 1

CRITICAL TAX RATES FOR
TRANSFER PRICES

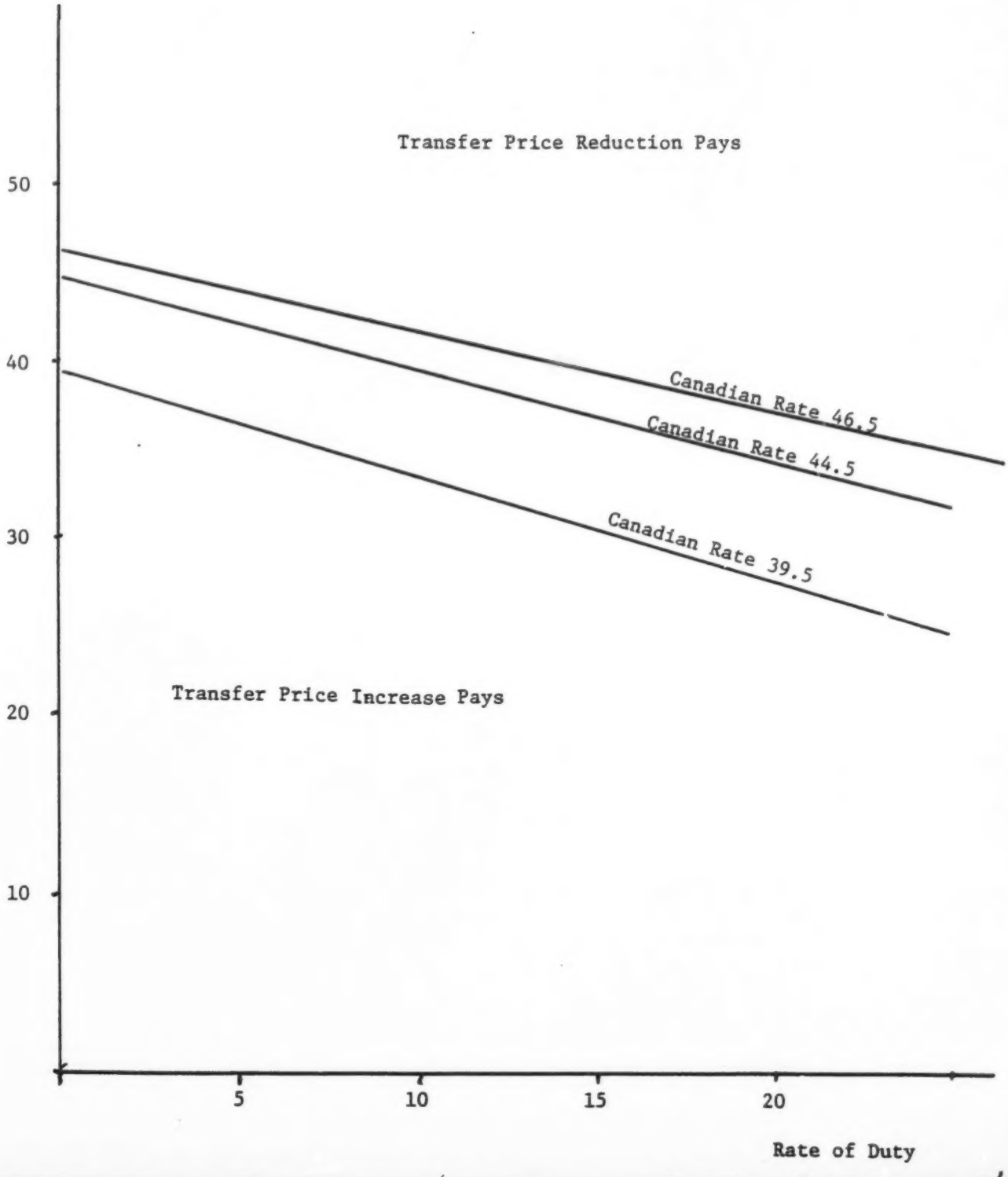

FIGURE 2

CRITICALITY OF VARIOUS COUNTRY'S TAX RATES

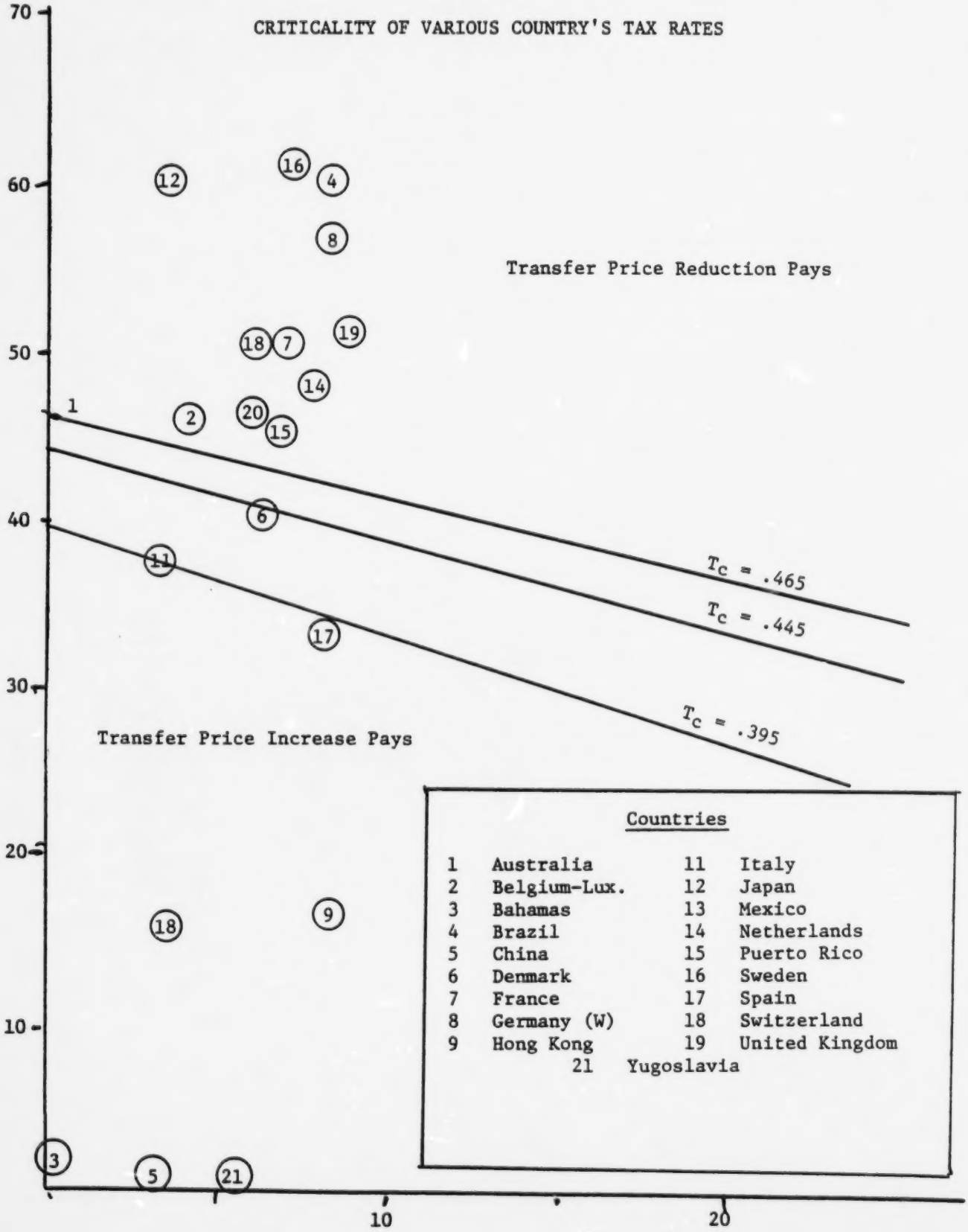

TABLE 1

CALCULATION OF TAX LIABILITIES BEFORE AND AFTER
TRANSFER PRICE INCREASE AND REPATRIATION

Duty Free

	Before Change in Transfer Price	After Change in Transfer Price	Net
Before Repatriation			
(a) Foreign Parent			
Taxable Income	10.00	11.00	
Tax @ 35%	3.50	3.85	
Net Increase in Tax			.35
(b) Canadian Subsidiary			
Taxable Income	10.00	9.00	
Tax @ 40%	4.00	3.60	
Net Saving in Income Tax			(.40)
(c) Combined - (Saving)			(.05)
On Repatriation			
(a) Canadian Subsidiary			
Dividend Paid	6.00	5.40	
Withholding Tax	.90	.81	
Net Tax (Saving)			(.09)
(b) Foreign Parent			
Subsidiary Income Taxable	10.00	9.00	
Tax Payable before Credits	3.50	3.15	
Less Credits* For:			
Withholding Tax	.90	.81	
Canadian Tax	4.00	3.60	
Total Credits	4.90	4.41	
Net Credits	1.40	1.26	
Cost (Reduction in Credit)			.14
(c) Combined Tax Cost			(.05)
Total: Before and After			Ø

*Assumes Credits on global basis and enough income in low tax jurisdictions to offset excess over domestic tax in parent jurisdiction.

TABLE 2

CALCULATION OF TAX LIABILITIES BEFORE AND AFTER
TRANSFER PRICE INCREASE AND REPATRIATION

Dutiable

	Before Change in Transfer Price	After Change in Transfer Price	Net
Before Repatriation			
(a) Foreign Parent			
Taxable Income	10.00	11.00	
Tax @ 35%	3.50	3.85	
Net Increase in Tax			.35
(b) Canadian Subsidiary			
Increase in Price		1.00	
Duty		.10	.10
Taxable Income	10.00	8.90	
Tax @ 40%	4.00	3.54	
Net Saving in Income Tax			(.46)
(c) Combined - (Saving)			(.01)
On Repatriation			
(a) Canadian Subsidiary			
Dividend Paid	6.00	5.36	
Withholding Tax	.90	.804	
Net Tax (Saving)			(.096)
(b) Foreign Parent			
Subsidiary Income Taxable	10.00	8.90	
Tax Payable before Credits	3.50	3.115	
Less Credits* For:			
Withholding Tax	.90	.804	
Canadian Tax	4.00	3.54	
Total Credits	4.90	4.344	
Net Credit	1.40	1.229	
Cost (Reduction in Credit)			.171
(c) Combined - Tax Cost			.075
Total - Before and After - Cost (equal to duty - parent country tax saving due to duty.)			.065

* Assumed Credits on global basis and enough income in low tax jurisdictions to offset excess over domestic tax in parent jurisdiction.

TABLE 3

MARGINAL TAX RATES ON MANUFACTURING AND PROCESSING
CANADA, 1973-1984

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
A. Federal Tax												
Basic Federal Rate	49	48	47	46	46	46	46	46	46	46		
Abatement	10	10	10	10	10	10	10	10	10	10		
Manufacturing and Processing Deduction	9	8	7	6	6	6	6	6	6	6		
	30	30	30	30	30	30	30	30	30	30		
Surtax (Reduction)	(2.1)	-	-	-	-	-	1.5	1.5	1.5	1.5		
Net Federal Rate	27.9	30	30	30	30	30	31.5	31.5	31.5	31.5		
B. Inclusive of Provincial Tax												
Newfoundland	40.9	43	43	44	44	44	45.5	46.5	46.5	47.5		
Prince Edward Island	37.9	40	40	40	40	40	41.5	41.5	41.5	41.5		
Nova Scotia	37.9	40	40	42	42	42	43.5	41.5	44.5	46.5		
New Brunswick	37.9	40	40	40	42	42	43.5	43.5	45.5	45.5		
Quebec	39.9	42	42	42	42	42	43.5	44.5	44.5	39.5		
Ontario	39.9	42	42	42	42	43	44.5	44.5	44.5	44.5		
Manitoba	40.9	43	43	45	45	45	46.5	46.5	46.5	46.5		
Saskatchewan	39.9	42	42	42	44	44	45.5	45.5	45.5	45.5		
Alberta	38.9	41	41	41	41	41	42.5	42.5	42.5	42.5		
British Columbia	37.9	42	42	45	45	45	46.5	46.5	47.5	47.5		

TABLE 4

PROVISIONS OF CORPORATE INCOME TAX LEGISLATION APPLICABLE TO LARGE MANUFACTURERS
1983

Country	Base Rate			Taxes on Subs.			State/Local/Province			Witholding		Foreign Taxes		Special
		D	U	Im	REP	Special	Rate	Credit	Ded.	Accrual	Canada	Deduct	Credit	Incentives
Australia	W	46	46	-	x	-	-	-	-	30	15	-	x	
Austria	W	27.5	55	-	x	-	14	-	x	20	15	-	x	
Bahamas	W	0	0	-	-	-	-	-	-	-	-	-	-	
Barbados	W	48	48	-	x	-	-	-	-	40	15	-	x	yes
Belgium	W	45	45	-	x	-	-	-	-	20	15	-	x	
Brazil	L	35	60	-	0	-	-	-	-	25	15	-	-	
Denmark	W	40	40	-	x	-	-	-	-	30	15	-	x	
Dom. Republic	L	41	41	-	0	-	-	-	-	18	18	-	-	yes
Finland	W	43	43	-	x	-	13 to 19	-	x	25	15	-	x	
France	L(W)	50	50	-	-	Tax Havens	-	-	-	25	15	-	-	
Germany (W)	W	36	56	-	x	Tax Havens	11 to 18	-	x	25	15	-	x	
Hong Kong	L	16.5	16.5	-	0	-	-	-	-	0	0	-	-	
Ireland	W	50	70	-	x	-	-	-	-	0	0	-	x	yes
Italy	W	38.8	38.8	x	-	-	-	-	-	30	15	-	x	
Jamaica	W	45	45	-	x	-	-	-	-	37.5	32.5	-	x	yes
Japan	W	Varies	(High)	x	-	-	-	-	x	20	15	-	x	
Netherlands	W	48	48	-	treaty	-	-	-	-	25	15	-	by treaty	
Norway	W	51	51	-	x	-	-	-	-	25	15	-	x	
Portugal	W	40	52	-	x	-	-	-	-	18	15	-	x	yes
Puerto Rico	W	45	45	-	x	-	-	-	-	25	25	-	by treaty	yes
Singapore	W	40	40	-	x	-	-	-	-	0	0	-	x	yes
Spain	W	33	33	-	x	-	-	-	-	16	15	-	x	
Sweden	L	60	60.4	-	0	-	(included)		-	30	15	-	-	
Switzerland	L	Varies	(Low)	-	0	-	-	-	-	35	15	-	-	
United Kingdom	W	52	52	-	x	-	-	-	-	0	0	-	x	yes
United States	W	46	46	-	x	-	0 to 12	-	x	30	15	-	x	

Abbreviations: x = applicable
0 = none levied
W = world
L = local
Tax Havens = Income in Tax Haven Subsidiaries taxed as accrued
Yes = exemption periods 3-30 years in specified areas.

D = Distributed
U = Undistributed

Source: Price Waterhouse & Company, Corporate Taxes, A Worldwide Survey (1913)(New York, 1983).

TABLE 5

PHARMACEUTICAL IMPORTS 1980/1983

Country of Origin	Imports - $000		Percent of Imports	
	1980	1983	1980	1983
Australia	1,910	3,055	0.5	0.6
Belgium-Luxembourg	4,966	3,308	1.4	0.7
Bahamas	1,661	2,576	0.5	0.5
Brazil	173	1,807	-	0.4
China (Peoples' Republic)	1,638	4,020	0.4	0.8
Denmark	5,904	3,203	1.6	0.7
France	9,792	6,737	2.7	1.4
Germany (Fed. Rep.)	16,981	24,860	4.7	5.2
Hong Kong	1,215	2,227	0.3	0.5
Ireland	3,131	7,293	0.9	1.5
Italy	8,858	9,537	2.5	2.0
Japan	8,511	6,958	2.4	1.5
Mexico	2,347	2,247	0.7	0.5
Netherlands	2,672	2,053	0.7	0.4
Norway	5,850	86	1.6	
Puerto Rico	27,503	38,230	7.6	8.0
Sweden	6,334	8,435	1.8	1.8
Spain	842	3,223	0.2	0.7
Switzerland	23,916	61,248	6.6	12.8
United Kingdom	48,546	56,896	13.5	11.9
U.S.A.	172,500	223,832	47.9	46.9
Yugoslavia	1,086	570	0.3	0.1
Others, each less than $ million	3,416	11,096	1.8	1.2
Total	359,752	477,387		

Source: See Appendix B.

TABLE 6

SAMPLE STATISTICS: TEST OF PARENT/SUBSIDIARY
PROFITABILITY RATIOS 1982

	n	Mean	Standard Deviation[1]
Tax rates favour Reduction in Transfer Price:	20	1.94	2.21
Tax rates favour Increase in Transfer Price:	4	-.71	2.51

$S_D = 1.2104$

t ratio = 2.189

(1) $$\frac{\Sigma(x_i - \bar{x})^2}{n-1}$$

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